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10/553,023

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Daniel Hauser

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EXAMINER

CHEN, CHRISTINE

ART UNIT

PAPER NUMBER

4116

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/553,023

**Applicant(s)**

HAUSER, DANIEL

**Examiner**

CHRISTINE CHEN

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11 October 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☒ Claim(s) 6 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 October 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)
- Paper No(s)/Mail Date \_\_\_\_\_

- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Inventor's Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Status of Application***

Claims 1-14 are pending and presented for examination.

### ***Priority***

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Information Disclosure Statement***

1. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609.04(a) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

### ***Drawings***

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: "the ceramic sealing ring 53" and "steel ring 54" (spec, p. 6, para "to ensure a..."). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as

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either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Specification***

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

#### **Arrangement of the Specification**

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
- (e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC.
- (f) BACKGROUND OF THE INVENTION.
  - (1) Field of the Invention.
  - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (g) BRIEF SUMMARY OF THE INVENTION.
- (h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (i) DETAILED DESCRIPTION OF THE INVENTION.
- (j) CLAIM OR CLAIMS (commencing on a separate sheet).
- (k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

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3. The disclosure is objected to because of the following informalities: The number of the drawings on page 4 is unclear. On page 4, the paragraph beginning "The molten bath...", on line 5 of the paragraph, it reads "funnel 7", on line 6 of the paragraph, it reads "funnel 6" and on line 7 of the paragraph, it reads "filter 7".

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The wording in claim 1 is unclear.

6. Claim 6 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 6 recites the limitation "the spillway" in the last line of the claim. There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 7-9, 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fieber (US 6,426,037 hereinafter A1).

Claim 1 is drawn to a holding furnace.

Fieber (A1) teaches a dosing chamber to be placed in the holding chamber of a molten metal furnace in which the molten metal is discharged through a port and up into a metal receiver (abstract). Specifically, the molten metal flows up a stalk tube (Figure 1, **42**) measurable via a flow sensor (Figure 1, **44**), through a shot sleeve (Figure 1, **43**) and into a pour cup (Figure 1, **51**) or something similar (col. 3, li. 62-64).

While Fieber (A1) does not teach a sealable outlet opening in his conveying tube it would have been obvious to one of ordinary skill in the art to modify Fieber's (A1) invention to include one in order to ease and regulate the flow of the molten metal as well as to discourage backflow. In addition, valves are well known in the art for this purpose. Despite this, Fieber (A1) does teach the use of a stopper tube (Figure 1, **31**) which closes up a different opening (Figure 1, **24**) present in his dosing chamber (Figure 1, **10**). Therefore, while Fieber (A1) fails to teach a sealable outlet opening in his conveying tube, he does teach its mechanism, a claim limitation found in claim 1 of the instant invention.

While Fieber (A1) does not teach the metering chamber to be specifically rotatably and tiltably mounted in the holding furnace, he does teach that his dosing chamber is "insertable within and removable from" the furnace (abstract). Therefore he teaches the use of the movement of the dosing chamber in the holding furnace. In

addition, it would have been obvious to one of ordinary skill in the art to try and tilt and rotate as necessary to ease the process of diecasting.

Claim 7 further limits claim 1, in which the metal melt is introduced into the metering chamber by an actively actuated or passive inlet valve. Similar to the claim limitation found in claim 1, while Fieber (A1) does not teach an inlet valve it would have been obvious to one of ordinary skill in the art to modify Fieber's (A1) invention to include one in order to ease and regulate the flow of the molten metal as well as to discourage backflow. Valves are well known in the art for this purpose.

Claim 8 further limits claim 1, in which the holding furnace further comprises a concentric arrangement of a turning arm and a tilting ring. While Fieber (A1) does not teach the concentric arrangement of a turning arm and a tilting ring, it would have been obvious to one of ordinary skill in the art to modify Fieber's (A1) invention to include this as a way to rotate and tilt the metering chamber. Benefits of these actions were described earlier in a response to claim 1. In addition, the arrangement and shape of these embodiments are obvious. As is well known in the art, an arm is the best shape for an instrument used for turning, as it minimizes the force needed and a ring is the best shape for an instrument used for tilting, as it allows the most ease in tilting an object in any direction. It would have been obvious to one of ordinary skill in the art to try any sort of arrangement between a turning arm and a tilting ring, including that of a concentric arrangement of the two, in order to maximize the movement of the metering chamber.

Claim 9 further limits claim 1, in which the molten bath can be transferred from the metering chamber via the riser and into a casting groove, a tube system, a casting chamber or a casting mold by pressurization with an inert gas.

As described earlier in a response to claim 1, Fieber (A1) teaches a dosing chamber in which the molten metal can be transferred up a stalk tube and into a pour cup or something similar (col. 3, li. 62-64). This is inclusive of a mold or a casting (col. 1, li. 14-16). In addition, in Fieber's (A1) invention the molten metal is transported up the stalk tube via a pressurized inert gas (abstract). Therefore, Fieber's teaching (A1) overlaps with the limitations of the instant claim.

Claims 12 and 13 further limit claim 1, in which the conveying tube has a docking unit provided with a positioning aid, in which the aid is in the form of a spherical cap. While Fieber (A1) teaches a shot sleeve (col. 3, li. 62-64), which is interpreted as a conveying tube, he does not teach a docking unit provided with a positioning aid. However, it would have been obvious to one of ordinary skill in the art to modify Fieber's invention (A1) with a docking unit in order to increase stability and create a support for the casting chamber, mold, or something similar and a positioning aid to ease the process of diecasting, which goes along the same reasoning for the ability to tilt and rotate described previously. In addition, it is well known in the art that a docking unit and a positioning aid serve these purposes. Also, it would have been obvious to one of ordinary skill in the art to try various shapes for the design of the positioning aid and prefer one shape over another if it serves its purpose better. In this particular situation, a spherical cap was found to be the most suitable.



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3. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fieber (A1) as applied to claim 1 above, and further in view of Beatenbough (US 3,702,066 hereinafter A4).

Claim 2 further limits claim 1, in which an expansion bellows is used to drive the valve rod. While Fieber (A1) fails to teach the limitation of the instant claim, Beatenbough (A4) teaches the use of expandable bellows to operate a valve passage (abstract). It would have been obvious to modify Fieber's invention (A1) with the bellows driven valve rod taught by Beatenbough (A4) as this is a situation of combining prior art elements according to known methods to yield predictable results.

4. Claims 3 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fieber (A1) as applied to claim 1 above, and further in view of Krause (US 3,708,599 hereinafter A5).

Claims 3 and 6 further limit claim 1, in which retractable electrodes are present in the holding furnace. While Fieber (A1) fails to teach the limitation of the instant claim, Krause (A5) teaches the use of retractable electrodes within a furnace (col. 4, li. 35-38). It would have been obvious to modify Fieber's invention (A1) with the retractable electrodes taught by Krause (A5) as a method of apportioning the molten metal. While claims 3 and 6 include other claim limitations (i.e. "electrodes can be actively retracted while filling the metering chamber after a melt surface has been scanned" and "the melt surface can be scanned before the spillway is reached"), they are more akin to the phrasing of a method claim and it is assumed these steps may be preformed, depending on the positioning of the electrodes within the furnace.

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5. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fieber (A1) and Krause (A5) as applied to claim 3 above, and further in view of Baum (US 3,650,782 hereinafter A6).

Claim 4 further limits claim 1, in which an expansion bellows is used to drive the return motion of the electrodes. While Fieber (A1) fails to teach the limitation of the instant claim, Baum (A6) teaches a retractable electrode fixed onto a bellows (col. 2, li. 51-56). It is interpreted the placement of the two would allow for the bellows to drive the motion of the electrode. Therefore, it would have been obvious to modify Fieber's invention (A1) with the bellows driven electrodes taught by Baum (A6) as this is a situation of combining prior art elements according to known methods to yield predictable results.

6. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fieber (A1) as applied to claim 1 above, and further in view of Greenleaf (US 2004/0139965 hereinafter A7).

Claim 5 further limits claim 1, in which the molten bath is introduced into the metering chamber by a spillway in the metering chamber. While Fieber (A1) fails to teach the limitation of the instant claim, it is well known in the art to "include angled spillway filling channels designed to limit disruption of the flow of formulation into the metering chamber" ( Greenleaf, A7 reference, p. 2, left hand column, li. 1-3). It would have been obvious to modify Fieber's invention (A1) with a spillway in the metering chamber as this is a situation of combining prior art elements according to known methods to yield predictable results.

7. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fieber (A1) as applied to claim 1 above, and further in view of Kemper (US 6,073,596 hereinafter A8).

Claim 10 further limits claim 1, in which the pressure progression in the metering chamber can be determined by means of sensors. While Fieber (A1) fails to teach the limitation of the instant claim, Kemper (A8) teaches the use of sensors to measure pressure progression (col. 5, li. 28-30). It would have been obvious to modify Fieber's invention (A1) with the pressure progression sensors taught by Kemper (A8) as this is a situation of combining prior art elements according to known methods to yield predictable results. In addition, this modification would allow for the apportioning of molten metal, as it is the pressure caused by the inert gas which forces the molten metal up the stalk tube and the pressure affects the rate at which this occurs.

8. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fieber (A1) as applied to claim 1 above, and further in view of Leshner (US 3,708,088 hereinafter A9).

Claim 11 further limits claim 1, in which the metering is regulated by means of a programming control system. While Fieber (A1) fails to teach the limitation of the instant claim, Leshner (A9) teaches the use of a circuit control to dispense a desired amount of liquid (col. 2, li. 10-15). It would have been obvious to modify Fieber's invention (A1) with the programming control system taught by Leshner (A9) as this is a method of obtaining a consistent production of desired output.

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9. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fieber (A1) as applied to claim 1 above, and further in view of Hara (US 4,189,697 hereinafter A10).

Claim 14 further limits claim 12, in which a melt transfer path after the docking unit is insulated by a ceramic bushing, which is inserted in a replaceable wearing bushing in a casting chamber.

While Fieber (A1) fails to teach these claim limitations, it would have been obvious to one of ordinary skill in the art to insulate a melt transfer path. Furthermore, it is well known in the art that ceramic bushings are used as insulation (Hara, A10 reference, col. 2, li. 53-55).

Similar to the use of a bushing to insulate the melt transfer path, it would have been obvious to one of ordinary skill in the art to insulate the casting chamber. The insulation aids in the state of the metal, as it is much easier to transfer molten metal than molten metal which has solidified.

The placement of the ceramic bushing in the wearing bushing allows for greater ease in the transportation of the molten metal from the transfer path to the casting chamber.

### ***Conclusion***

No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHRISTINE CHEN whose telephone number is

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(571)270-3590. The examiner can normally be reached on Monday-Friday 8:30am-5pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vickie Kim can be reached on (571) 272-0579. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

CC

/Vickie Kim/

Supervisory Patent Examiner, Art Unit 4116